

## The History of Behavior Analysis in Manitoba: A Sparsely Populated Canadian Province with an International Influence on Behavior Analysis

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This article examines the convergence of factors that led to behavior analysis taking root, flourishing, and bearing fruit in a prairie province of Canada. In the latter half of the 1960s, Garry Martin and Joseph Pear began teaching behavior-analytic courses at the University of Manitoba. They and their students then initiated behavioral treatment and research programs at the Manitoba Developmental Center and St.Amant, the two main residential facilities for persons with intellectual disabilities and autism. Since that time, behavior analysis in Manitoba has flourished, and the knowledge and skills gained have been shared with other behavior analysts throughout the world through conferences, articles, and books. Behavior-analytic books by authors who live and work in Manitoba have been translated into eight languages. Moreover, University of Manitoba graduates in behavior analysis have helped to spread knowledge of behavior analysis throughout the world, and a number have achieved highly influential positions and widespread recognition within the discipline.

*Key words:* history of behavior analysis, St.Amant, University of Manitoba

The Canadian province of Manitoba is geographically quite large (552,330 square kilometers; about the size of France), but is small in population (just under 1.3 million). Approximately half of the population lives in the capital city of Winnipeg, where the major university of the province, the University of Manitoba (U of M), is located. In this article, we trace the history of behavior analysis in Manitoba from its beginning in 1966 to the present. We present this history to readers of *The Behavior Analyst* for four reasons. First, this article discusses the lineage of many well-known North American and Brazilian behavior analysts. Second, for a province that is small in population and relatively isolated from other behavior-analytic communities (located in the center of

Canada), the international influence of Manitoba behavior analysis has been impressive. Third, we identify factors that have facilitated the development and maintenance of behavior analysis in Manitoba. Fourth, we hope that our analysis of the environmental determinants of Manitoba's behavior-analytic productivity will highlight some possible conditions for replicating such productivity and inspire others to analyze and publish their own regional histories from an environmental perspective. The development of behavior analysis in Manitoba is described in three main phases: Phase 1, its beginnings in the 1960s and early 1970s; Phase 2, a period of considerable growth in behavior analysis during the 1970s and 1980s; and Phase 3, the consolidation of behavior analysis during approximately the past 20 years.

### PHASE 1: THE BEGINNINGS

In 1966, after his doctoral work at Arizona State University (ASU; then known as "Fort Skinner in the Desert" due to the number of high-profile behavior analysts in the Psychology Department there) Garry

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Martin, a native of Neepawa, Manitoba, returned to his home province as a newly hired assistant professor at St. Paul's College. At that time, St. Paul's College was an undergraduate college located on the U of M campus with an affiliation with the U of M but with an independent hiring policy. Martin, who was trained in behavior analysis by such prominent behaviorists as Jack Michael and Lee Myerson, was hired to teach sections of an undergraduate course titled Behavior Analysis. Although the originators of the course intended it to be a traditional undergraduate psychology research methods course, one of the textbooks that Martin assigned was Skinner's (1953) *Science and Human Behavior*, with students required to use operant procedures to teach laboratory rats to lever press in homemade operant chambers. During that same year, the U of M's Psychology Department hired Joseph Pear, a graduate of the Ohio State University, as an assistant professor to teach a graduate research methods and statistics course. Pear's background was in basic operant research, having been trained by an up-and-coming experimental psychologist, Reed Lawson, who died before his full potential could be realized. In addition to a standard graduate statistics book, Pear used Sidman's (1960) *Tactics of Scientific Research* in the course. After initially using a traditional motivation textbook in his undergraduate motivation course, Pear introduced his undergraduate students to behavior analysis by switching to Millenson's *Principles of Behavioral Analysis* (1967). He also established a basic operant animal research lab and, along with his students, began research on the operant behavior of rats (e.g., Pear & Wilkie, 1971) and later pigeons (e.g., Pear & Rector, 1979). Although Martin and Pear were initially unaware of each other's presence, their mutual interest in behavior analysis was soon brought

to their attention through conversations with their students. In 1968, Martin and Pear jointly taught the first behavior modification graduate course at the U of M. In 1969, St. Paul's College became a part of the U of M, and Martin and Pear were both located in the Psychology Department.

In the 1960s in Manitoba, two main residential facilities existed for persons with intellectual disabilities (IDs), including those with autism. Both facilities played an important role in the history of behavior analysis in Manitoba. In Winnipeg, across the Red River from the U of M, children with IDs resided at the St. Amant Ward of the St. Vital hospital (a former tuberculosis sanatorium founded by the Gray Nuns of Manitoba). The major facility for individuals with IDs, however, was the Manitoba School for Retardates (now the Manitoba Development Centre; MDC). Located approximately 100 km west of Winnipeg in the town of Portage la Prairie, the MDC in the 1960s was a large facility with approximately 1,200 residents. When the children with IDs in the St. Amant Ward reached the age of about 8 years, they were typically transferred to the MDC.

In early 1967, Glen Lowther, the medical superintendent at MDC, invited Martin, along with four of his undergraduate psychology students, to spend the summer creating a teaching program for children with autism at the MDC. Martin and his students developed a behavioral training program for 10 children with autism who ranged in age from 8 to 13 years (Martin, England, Kaprowy, Kilgour, & Pilek, 1968). Although the program was highly successful, the only resource Lowther could provide for continuing the program in the fall (in part due to the MDC's primary emphasis on residential care rather than habilitation) was a teacher with whom the children could meet for only a half-hour per day. To continue the behavior-analytic training

program for the children, Martin and Pear gave their undergraduate students the option of writing term papers or participating in a practicum. Students who opted for the practicum agreed to spend 10 hr per term (approximately equal to a U.S. semester) at the MDC, not including travel time (approximately 80 min each way between Portage la Prairie and the U of M). At the MDC, the practicum students conducted training sessions with the children under the supervision of Martin, Pear, and the four students who had worked on the project during the previous summer. Data on the effectiveness of the daily sessions provided by the students were described in a paper titled "Short-Term Participation by 130 Undergraduates as Operant Conditioners in an Ongoing Project with Autistic Children" (Martin & Pear, 1970).

In 1968, Lowther invited Martin to focus on behavior-analytic training for the MDC staff and to develop training programs for persons with IDs (e.g., see Martin, 1970, 1972; Martin, Kehoe, Bird, Jensen, & Darbyshire, 1971; Martin, McDonald, & Omichinski, 1971). For the next 17 years, Martin and his students traveled to the MDC several times each week to conduct behavior-analytic research and applications with the residents and staff. The growth of behavior analysis at the MDC will be discussed further in Phase 2.

In the fall of 1968, influenced by Martin and Pear, a behavior modification department was established at the St. Amant Ward, with Pear hired as a consultant by the hospital's chief administrator, Sister Bertha Baumann. The evolution of the St. Vital Hospital and the St. Amant Ward to become St. Amant will be discussed in more detail in Phase 2. In addition to consulting with the behavior modification department, Pear and some of his students began a research project at the St. Amant Ward, where they imported procedures from Pear's

basic operant research lab. Although he focused on the development of verbal behavior (specifically picture and object naming), Pear programmed reinforcers for clients according to fundamental schedules of reinforcement using standard operant equipment (Stephens, Pear, Wray, & Jackson, 1975).

In 1972, in the common lay language of the time, a Winnipeg newspaper article described Pear's program under the banner "Computerized Bribery Helps Retarded Children" (Tennenhouse, 1972). Despite the characterization of operant conditioning as bribery, the article was very favorable about Pear's and Martin's programs. Also in 1972, Martin's behavior modification program at MDC was the subject of a half-hour film titled "Token Gesture" that was presented nationally as part of the Canadian Television Network's "Quality of Life" series. This film also won a silver medal in the education category of the International Film and TV Festival of New York, a festival that drew entries from many countries such as Czechoslovakia, Hungary, Germany, Italy, France, Japan, and Britain.

## PHASE 2: CONSIDERABLE GROWTH IN BEHAVIOR ANALYSIS

*The University of Manitoba and the University of Winnipeg*

When Martin and Pear first started teaching behavior modification in Manitoba, no behavior modification graduate program, in the sense that graduate students could specialize in behavior modification or behavior analysis as their major area of study, existed in Canada. Their early research and applications in behavior analysis were all conducted with undergraduates who had completed their behavior modification courses. Over the years, undergraduates have continued to play a major role in research and applications in behavior

analysis in Manitoba. It was partly the lobbying of those undergraduates in the Psychology Department at the U of M that led to the establishment of the graduate program in behavior modification in 1971. Martin's first five graduate students and Pear's first four graduate students were all undergraduates from their behavior modification courses at the U of M.

Since 1967, the University of Winnipeg (U of W), a compact university located in downtown Winnipeg that offers undergraduate and select graduate programs to over 9,000 students, has offered an undergraduate degree in psychology. In 1971, the U of W hired Ron Norton, who started teaching a behavior modification course in the Psychology Department. The undergraduates enrolled in Norton's course increased by almost a factor of three between 1971 and 1979 (Martin, 1981). Many undergraduates from the psychology program at U of W became behavior analysis graduate students at the U of M.

By the mid-1970s, Martin and Pear were communicating on an almost daily basis with two general audiences: college and university students taking courses in behavior modification and practitioners working at agencies such as MDC and St. Amant who were involved in developing behavioral training programs for their clients. Martin's and Pear's personal experiences over the preceding 10 years in teaching individuals in these two groups convinced them of the need for a resource with information about behavior modification principles and procedures. However, they were unable to find a textbook that was designed to serve both audiences. They therefore decided to write one, and the result was the first edition of *Behavior Modification: What It Is and How to Do It*, published in 1978. As will be discussed later, that book and its subsequent editions have had a major impact on behavior analysis in many countries.

In the 1970s and 1980s, significant contributions were made to behavior analysis by professors in the Psychology Department at the U of M with expertise in behavior analysis (Steve Holborn), basic learning processes (Dennis Dyck, John McIntyre), behavioral treatment of anxiety disorders (John Walker), Pavlovian conditioning (Bob Tait), child psychology (John Whiteley), behavioral treatment of abused children (Rayleen DeLuca), behavioral treatment of eating disorders (Mike LeBow), cognitive behavior modification (Ed Johnson), and behavioral treatment of sexual dysfunction (Derek Jehu, Faculty of Social Work). In 1982, Martin, Pear, and other behaviorally oriented staff members proposed an expanded behavior modification graduate program separate from the clinical psychology program. When it appeared that two competing "clinical" programs within the Psychology Department existed, the head of the department (John McIntyre) suggested that the behavioral psychologists might join the clinicians. In 1984, after extensive discussion, a behavioral stream of clinical psychology was formed. Once the two streams of the clinical program, general and behavioral, were established, they functioned together with great collegiality. The dual clinical program received accreditation (and commendation) from both the American Psychological Association and the Canadian Psychological Association.

In the early 1980s, in addition to his work at the MDC (described below), Martin and his students began demonstrating the effectiveness of behavior analysis for enhancing athletic performance (e.g., Koop & Martin, 1983). Martin collaborated with Dennis Hrycaiko of the then Faculty of Physical Education at the U of M (Martin & Hrycaiko, 1983). Since that time, Martin and Hrycaiko have jointly supervised many graduate students in behavioral sport psychology. One of these graduate students was Adrienne Leslie-Toogood, the current



Director of Sport Psychology at the Canadian Sport Centre in Manitoba.

By the mid-1980s, Pear's applied research at St. Amant had focused on developing a computer program for the automated shaping of vocal sounds with persons with severe IDs (Desrochers, Kinsner, & Pear, 1988; Pear, Kinsner, & Roy, 1987), based on the program for automatically shaping operant behavior in his basic lab (Pear & Legris, 1987). However, he was unable to obtain grant support for this project. As expressed by Pear (J. J. Pear, personal communication, September 10, 2010), "One of the reviewers' main criticisms was that we were trying to teach speech to individuals who were incapable of learning speech." Thereafter, Pear terminated his involvement at St. Amant to focus on his basic operant research, writing, and his interest in examining the application of behavior analysis to university teaching. A product of these efforts was the computer-aided personalized system of instruction (CAPSI; Pear & Crone-Todd, 1999; Pear & Kinsner, 1988; Pear, Schnerch, Silva, Svenningsen, & Lambert, 2011), a computerized instructional program designed to incorporate the procedures outlined in Fred Keller's personalized system of instruction (PSI; Keller, 1968). Darlene Crone-Todd, one of Pear's former doctoral students who contributed greatly to the development of CAPSI, is currently Editor of *The Behavior Analyst Today*. Since its development, CAPSI has been used at nine universities in Canada, the U.S., and Brazil. CAPSI has been used as the sole teaching method or as part of a blended learning approach in a number of courses at the undergraduate and graduate levels (Pear & Martin, 2004; Pear et al., 2011).

#### *The Manitoba Development Centre*

In 1970, Glen Lowther established a behavior modification department

at the MDC. The department included the director, Mary Anne Michalishyn, and three staff members. The primary function of the department was to aid in the treatment of recurring behavior problems of individual residents. When a problem was referred by a ward staff member, one of the behavior modification staff would conduct a behavioral assessment, design a program, implement the program, and when success was evident, train the ward staff to maintain the treatment procedures. Descriptions of the treatment success of the initial 17 referrals were highly positive (Michalishyn, McDonald, Samels, & Bird, 1971). Through the efforts of Martin, Lowther, the MDC nursing staff, and the graduate students, many who later assumed positions as psychology staff, the MDC became recognized as a North American leader in research and applications of behavior analysis with individuals with IDs and autism (e.g., Martin, 1972).

One of the undergraduate students from the U of M who participated in the MDC program in the early 1970s was Linda Parrott (now Linda J. Parrott Hayes). She went on to complete her graduate studies at Western Michigan University (WMU). Many readers will be familiar with her many publications and her important contributions to the development of the behavior analysis program at the University of Nevada-Reno and to the Association for Behavior Analysis International (ABAI), including serving as president in 2004.

One of Martin's first graduate students in the early 1970s to conduct research and applications at the MDC was Larry Hardy. During his graduate studies, Hardy was assigned to a pilot project to evaluate the feasibility of a behavior-analytic consultation model for care providers in the community. The outcomes of that project were so positive that, in 1973, Lowther, along with Martin's clinical support, established a community-based behavior

modification program for persons with IDs in the Community Services Department of the Manitoba government. The first full-time staff member in what came to be called the Community Behavior Counseling Services was Mary Anne Hardy (formerly Michalishyn), a former undergraduate student of Martin's and the first director of the Behavior Modification Department at the MDC. That program also proved to be quite successful (M. A. Hardy, 1980).

While at the MDC, Larry Hardy was the Director of Research, Director of the Psychology Department, and in 1980, became the Program Director. During that time, he led the development of an objective behavioral assessment system, with 207 test items, for assessing the skills of persons with moderate to severe ID (L. Hardy, Martin, Yu, Leader, & Quinn, 1981). In 1984, he returned to Winnipeg to become the executive director for the Manitoba Community Living Program in the Department of Family Services. He held this position until 1987 when he became the department's senior psychologist where, until he retired in 2012, he continued to provide consultation and supervision to master's-level professionals in a variety of programs, including Behavioral Psychology Services, Autism Outreach Program, Fetal Alcohol Outreach Program, and Day Care Behavior Consultation.

In the 1970s and 1980s in many countries, three forces combined to influence the treatment of persons with IDs: (a) Normalization advocates, such as Wolfensberger (1972), argued that persons with IDs should be helped to lead the most normal lives possible and that traditional institutions were inadequate for that goal; (b) civil rights advocates and parents of persons with IDs worked to secure the legal rights of these individuals to receive as normal an education as possible; and (c) behavior analysts created the technology that made it possible to teach a wide

variety of skills to this population. During this period in Manitoba, the Welcome Home project was implemented to reintroduce hundreds of individuals from the MDC to the community. At the same time (described below), individuals with higher functioning abilities were moved from St. Amant to group homes. Some early contributions of behavior analysis to this process were described by Martin (1974) and Martin and Lowther (1975).

Some of the additional graduate students of Martin's who conducted research and applications at the MDC in the 1970s and 1980s were Larry Williams (discussed below), Dickie Yu (discussed below), and Linda and Stewart McDonald. Linda McDonald was one of the original members of the Behavior Modification Department at MDC. She received her master's degree in 1977. Stewart McDonald received his doctorate in 1980. They then moved to Alberta, where Stewart taught behavior modification at Grant MacEwan Community College (now G. M. University). After she received her doctorate at the University of Alberta, Linda McDonald taught in the Department of Educational Psychology there. Over the last 30 years, Stewart and Linda McDonald have made considerable contributions to the development of behavior analysis in Alberta.

During the mid- to late 1980s, a number of changes at the MDC led to it no longer being a major center of behavioral research in Manitoba. Some of those changes included (a) Lowther, who had been extremely supportive of behavioral research, left MDC to enter private practice; (b) many of the higher functioning clients entered the community; (c) the interest of management staff focused more on provision of effective care and service than on research into behavioral training for residents; and (d) because Pear had terminated his research program at St. Amant, Martin and his students were invited to

move their research program to St. Amant.

#### *St. Amant*

In 1974, the St. Vital Hospital, which had previously housed the St. Amant Ward, ceased to provide hospital services, and the entire facility, renamed the St. Amant Centre, became devoted to the care and treatment of individuals with IDs. Later the name was shortened to St. Amant. The mandate of the center was to function and further develop as a residential and community treatment facility for persons with IDs of all ages, including children with autism, which in those days was hardly, if at all, recognized as a separate diagnosis. In those early days, Pear was actively involved in behavior-analytic research with persons with IDs, and two of his graduate students, John Beiberdorf and Carl Stephens, contributed to the development and growth of the research program at St. Amant. After he received his doctorate in 1974, Stephens was hired as the head of the Behavior Modification Department, which under his direction was renamed the Psychology Department. Stephens described the development of the Behavior Modification and Psychology programs at St. Amant in an article in the *Journal of the Manitoba Behavior Modification Association* (Stephens, 1977).

Another graduate student of Pear's was Michael Hemingway, who earned his master's degree from the U of M in 1976 and went on to become a behavior analyst consultant for the state Developmental Disabilities Office of the Florida Department of Children and Families in 1986, and a senior behavior analyst in 1994. Hemingway served as President of the Florida Association for Behavior Analysis (FABA) and was a founding member of the Florida Behavior Analyst Certification program. Partly through his involve-

ment, the Florida Behavior Analyst Certification program was later transformed into the international Behavior Analyst Certification Board (BACB). Hemingway received the FABA Lifetime Achievement Award and a posthumous ABAAI Public Service Award, and the BACB now awards the Michael Hemingway Behavior Analysis Award annually to individuals recognized for making distinguished contributions to the field of behavior analysis.

In the 1980s, Carl Stephens became the Director of Clinical Services for St. Amant, during which time, assisted by grant funding, he began to develop external programs to demonstrate the effectiveness of a community model in providing services to individuals with IDs. The model used during a 3-year pilot project funded by the Winnipeg Foundation later became the St. Amant Community Residential Program, which remains active today. Additional pilot projects funded through granting agencies served as opportunities to demonstrate a model, called the Community Services Program at St. Amant, for supporting families with children and adults with IDs who live at home. With the development of these programs, Stephens became the Director of Programs.

#### *The Brazil Connection*

In the early 1970s, a strong Manitoba–Brazil behavior analysis connection was initiated by Fred Keller. Many behavior analysts are aware of Keller's important contributions to the early history of the discipline. In 1961, he accepted a position at the Universidade de São Paulo where he worked with Brazilian psychologists to develop the first operant conditioning courses there. In the mid-1960s, Keller and his Brazilian colleagues developed PSI (Keller, 1968). In 1965, he taught the first PSI-managed course in North America at ASU, where

Martin was a graduate student at that time. In 1972, one of Martin's advisers from ASU, Jack Michael, was teaching at WMU, and Keller was a professor emeritus there. They were instrumental in arranging for Martin to be invited to Kalamazoo to describe his behavior-analytic work at MDC. As Martin (G. L. Martin, personal communication, August 17, 2012) tells it, the evening after his talk, at a dinner party at Michael's house, one of the guests turned to Keller and asked, "So Fred, what's happening in behavior analysis in Brazil these days?" Keller replied, "They are doing some very good basic operant research, and they would like to get more involved in behavior modification applications, but they really need someone to go down and give them some help." While giving that reply, Keller happened to glance around the table and make eye contact with Martin, and continued, "So Garry, do you want to go to Brazil?" With Martin's consent, Keller then contacted three Brazilian psychologists at the Pontificia Universidade Católica de São Paulo (PUC-SP) who then invited Martin to help develop a university program for psychologists with specialization in behavior modification. He journeyed to Brazil in 1973, 1974, and 1975 to help with that task (Queiroz, Guilhardi, Guedes, & Martin, 1976).

In the mid-1970s, three graduates of PUC-SP traveled to Manitoba to pursue graduate studies with Martin. They included Lúcia Albuquerque (now Lucia Williams), who now teaches at the Universidade Federal de São Carlos (UFSCar); Amalia Andery, who is now director of the applied behavior analysis program at PUC-SP; and Angela Pallotta (now Cornick), who completed her doctorate in Manitoba, returned to Brazil, and then returned to play a major role at St. Amant (to be discussed below). A classmate of those students

in Brazil, Celso Goyos, also visited MDC in the 1970s to conduct research (Goyos, Michael, & Martin, 1979), and then went to graduate school under the supervision of Michael at WMU. Goyos now teaches at UFSCar.

In 1977, Larry Williams, a native Manitoban, completed his doctorate under Martin's supervision, after which he and Lúcia Williams relocated to Brazil. At UFSCar, Williams designed the first behavior analysis graduate program in Latin America. Along with two Brazilians, Deisy de Souza and Issaias Pesotti, Williams started the program in 1978 with input from Keller, who visited for a semester. Williams was the program director from 1979 to 1981 and taught in the program for 8 years. What started as a master's program now is a doctoral program. Several years later, Williams returned to Canada and became the director of three clinical programs at Surrey Place Centre in Toronto, where he trained over 50 behavior therapists and oversaw assessment and intervention for over a thousand individuals during a 10-year period. He was later hired to teach in the behavior analysis graduate program at the University of Nevada-Reno. Many readers will recognize Williams's name from his publications and his many years of important contributions to the Reno program and to ABAI.

#### *A Behavioral Professional Association and Many Publications*

In 1973, Martin, Pear, and their students founded the Manitoba Behavior Modification Association (MBMA). MBMA organized a series of conferences with prominent North and South American behavioral speakers such as Helio Guilhardi and Luis Otavio Queiroz (Brazil), Loren Acker and Ron Van Houten (Canada), Emilio Ribes-Inesta (Mexico), and Nancy Kerr,



TABLE 1

**Selected Behavioral Books Published by Authors Who Lived and Worked in Manitoba in the 1970s and 1980s. References Are in Chronological Order**

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- LeBow, M. D. (1973). *Behavior modification: A significant method in nursing practice*. Englewood Cliffs, NJ: Prentice Hall.<sup>a</sup>
- LeBow, M. D. (1976). *Approaches to modifying parent behavior*. New York, NY: Appleton-Century-Crofts.
- LeBow, M. D., & Perry, R. (1977). *If only I were thin*. Winnipeg, MB: Prairie Publishing.
- Norton, G. R. (1977). *Parenting*. Englewood Cliffs, NJ: Prentice Hall.
- Martin, G. L., & Pear, J. J. (1978). *Behavior modification: What it is and how to do it*. Englewood Cliffs, NJ: Prentice Hall.
- Jehu, D. (1979). *Sexual dysfunction: A behavioural approach to causation, assessment, and treatment*. Chichester, England: Wiley.
- Martin, G. L., & Osborne, J. G. (Eds.). (1980). *Helping in the community: Behavioral applications*. New York, NY: Plenum.
- Hardy, L., Martin, G. L., Yu, D., Leader, C., & Quinn, G. (1981). *Objective behavioral assessment of the severely and moderately mentally handicapped: The OBA*. Springfield, IL: Charles C Thomas.
- LeBow, M. D. (1981). *Weight control: The behavioural strategies*. New York, NY: Wiley.
- Martin, G. L., & Hrycaiko, D. (Eds.). (1983). *Behavior modification and coaching: Principles, procedures, and research*. Springfield, IL: Charles C Thomas.
- Martin, G. L., & Pear, J. J. (1983). *Behavior modification: What it is and how to do it* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.
- LeBow, M. D. (1984). *Child obesity: A new frontier of behaviour therapy*. New York, NY: Springer.<sup>b</sup>
- Martin, G. L., & Lumsden, J. (1987). *Coaching: An effective behavioral approach*. St. Louis, MO: Times Mirror/Mosby.
- LeBow, M. D. (1988). *The thin plan*. Champaign, IL: Human Kinetics.
- Martin, G. L., & Pear, J. J. (1988). *Behavior modification: What it is and how to do it* (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.<sup>c</sup>
- LeBow, M. D. (1989). *Adult obesity therapy*. New York, NY: Pergamon Press.<sup>d</sup>
- Martin, G. L., & Osborne, J. G. (1989). *Psychology, adjustment, and everyday living*. Englewood Cliffs, NJ: Prentice Hall.
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<sup>a</sup> Translated into Japanese.

<sup>b</sup> Translated into Spanish.

<sup>c</sup> Translated into Chinese.

<sup>d</sup> Translated into German.

Robert Kohlenberg, Fred Keller, Kenneth Lloyd, Lee Meyerson, Jack Michael, Grayson Osborne, Carl Thoresen, and Scott Wood (U.S.). In addition to organizing conferences, MBMA published a journal (*Journal of the Manitoba Behavior Modification Association*) that highlighted the productivity of local research and applications. Increasingly, however, behavior analysts in Manitoba turned their conference efforts away from MBMA and toward the Midwestern Association for Behavior Analysis, founded in 1974, which evolved into ABAI, and MBMA ceased to function in the early 1980s.

In the 1970s and 1980s, behavioral researchers who lived and worked in

Manitoba were extremely productive. In addition to many journal articles, they also published the books listed in Table 1.

### PHASE 3: CONSOLIDATION OF BEHAVIOR ANALYSIS IN MANITOBA

During the 1990s and 2000s, much of the development of behavior analysis in Manitoba occurred in conjunction with developments at St. Amant, including its collaboration with the U of M.

#### *The St. Amant Research Centre*

As indicated previously, in the late 1980s, with support from Carl Stephens, Martin and his students began

conducting behavior-analytic research and applications with persons with IDs and children with autism at St.Amant. In 1997, Stephens established the St.Amant Research Program, and Dickie Yu, a former doctoral student of Martin's, was convinced to return to Manitoba from Toronto to serve as the research director of the new program. The St.Amant Research Program, under Yu's leadership and with support from Stephens and Martin, has been highly successful and has expanded considerably. Since 1997, Yu has created partnerships with a number of faculties and professors at the U of M, and with researchers from a variety of disciplines across Canada. Between 1990 and 2002, research conducted at St.Amant led to 64 conference presentations, 25 journal articles, and just over 750,000 Canadian dollars in research funds. Because of the considerable amount of research conducted during this period, as well as the need to integrate the research with the service mandate of St.Amant, a research program manager position was created in late 2002, with Tricia Vause (Martin's former doctoral student) serving in that position. Since 2003, that position has been filled by Toby Martin (Martin's son and Pear's former doctoral student). In 2006, the research program became the St.Amant Research Centre, which now is a comprehensive resource in the area of developmental disabilities and autism for all Manitobans.

*Behavior-Analytic Treatment of Autism at St.Amant and the Brazil Connection*

In 1997, Stephens became the Vice President of Client Services at St. Amant. In the late 1990s, he worked on a pilot project in partnership with the Manitoba Families for Effective Autism Treatment to demonstrate the effectiveness of behavior analysis as an early intensive intervention for treatment of autism spectrum disor-

ders (ASD). In 2004, Stephens became the President and CEO of St.Amant and worked closely with representatives of the Manitoba government, who approached St.Amant to develop a fully funded behavior-analytic program for preschool children with ASD in Manitoba, the St.Amant Autism Learning Programs, formerly referred to as the St.Amant ABA Program.

As mentioned earlier, one of the Brazilian students who studied with Martin in the 1970s was Angela Cornick. In 1996, she returned to Winnipeg to accept a position at St.Amant. Since 2004, she has been the director of both the St.Amant Psychology Services and the St.Amant Autism Learning Programs, where she has overseen the growth of the highly successful government-funded St. Amant Autism Early Learning and School-Age Learning Programs.

The St.Amant Autism Learning Programs expanded in 2010 to include a consultative support service; the programs now serve over 200 children with ASD. In addition to government-funded Autism Tutors, who have at least a high school education and on-the-job training, and Autism Senior Tutors, who have undergraduate course work in behavior analysis and on-the-job training, the St.Amant Autism Learning Programs have a total of 20 staff members with either a master's or doctoral degree in behavior analysis and seven who are pursuing a master's degree in behavior analysis. The clinical coordinators for the St.Amant Autism Learning Programs are Daniela Fazzio, Kirsten Wirth, and Kerri Walters (first author), former doctoral students of Martin, Pear, and Yu, respectively. Fazzio received her master's degree in Brazil and her doctorate at the U of M under Martin's supervision. Fazzio and Martin recently published a self-instructional manual for teaching tutors and parents how to conduct discrete-trials teaching (DTT) sessions with children with autism (Fazzio & Martin, 2011). Pear has been collabo-

rating with Goyos and Mariliede Oliveiria from UFSCar and with Yu and Toby Martin in knowledge-translation research. Together, they are evaluating the use of CAPSI to teach practitioners to use the DTT manual and other self-instructional manuals that have been developed and evaluated at St.Amant. Three additional students from Brazil are currently receiving graduate training in behavior analysis at the U of M. Thus, the strong connections between Manitobans and Brazilians in behavior analysis continue to the present day.

*Behavior-Analytic Developments at the University of Manitoba and More Collaborations with St.Amant*

During the last 20 years at the U of M, behavior-analytic research has continued to flourish. Yu, Martin, and their students have focused their research in areas such as the reliability and validity of the Assessment of Basic Learning Abilities with persons with IDs (Martin, Thorsteinsson, Yu, Martin, & Vause, 2008), teaching tutors and parents how to conduct DTT with children with autism (e.g., Thomson et al., 2012), and evaluations of preference assessment procedures for persons with IDs (e.g., Lee, Yu, Martin, & Martin, 2010). Pear and his students have continued their basic operant research (e.g., Pear, 2004) and their CAPSI research (e.g., Pear et al., 2011). Martin and his students have also continued research in behavioral sport psychology (e.g., Leslie-Toogood & Martin, 2003; Ming & Martin, 1996). One of his students in sport psychology, Siri Ming, after receiving her master's degree at the U of M, worked in California for many years and was involved in the California Association for Behavior Analysis. She is now in the behavior analysis doctoral program at the National University of Ireland at Galway.

In 2001, Yu, Martin, Pear, and Steve Holborn formed the ABA Ad-

missions Area in the Department of Psychology at the U of M. For the next several years, they admitted students into both the ABA Admissions Area and the behavioral stream of clinical psychology, as described in Phase 2. Since 2006, the ABA Admissions Area has replaced the behavioral stream of clinical psychology for students who want to specialize in behavior analysis, thus harking back to the initial plan to establish a behavior modification program separate from the clinical program.

In 2003, Stephens, representing St. Amant, worked closely with the Psychology Department at the U of M to establish several joint positions between the U of M and St.Amant. Since 2003, Yu has served jointly as a professor in the Psychology Department in the ABA program at the U of M and as director of research at St.Amant. With the development of what is now the St.Amant Research Centre in 2006, research has branched out to include researchers from the faculties of Human Ecology and Nursing. In 2010, the U of M and St.Amant jointly funded a newly created tenure-track assistant professor position. This position was filled by Javier Virues-Ortega, who is affiliated with both the U of M Psychology Department and the St.Amant Research Centre. Originally from Chiclan de la Frontera (Cádiz, Spain), Virues-Ortega came to Manitoba from the Instituto de Salud Carlos III in Madrid, where he completed a postdoctoral placement.

St.Amant continues to play a major role in the behavior-analytic training of undergraduate and graduate students. From 1997 to the present, 76 graduate or honors students' theses have been conducted through the St.Amant Research Centre. In addition to U of M students, the St.Amant Research Centre has hosted graduate students from other universities such as WMU. For example, Ivy Chong completed her honors thesis research at St.Amant in the late 1990s (Chong,

Yu, Martin, Harapiuk, & Garinger, 2000) and later pursued her master's and doctoral degrees in behavior analysis at WMU under the supervision of Jim Carr. She returned to St. Amant while a student at WMU to complete a practicum in behavior-analytic treatment of persons with ID and to collect the data for her doctoral dissertation. Chong is now the Director of Behavioral Services at the Scott Center for Autism Treatment at the Florida Institute of Technology.

#### *A New Manitoba Behavior Analysis Association*

In 2004, current and former graduate students, with support from Yu, Martin, Pear, and Holborn, founded the Manitoba Association for Behaviour Analysis (MABA), an affiliate chapter of ABAI. Kirsten Wirth and Kerri Walters played a lead role in founding and directing MABA. MABA is currently in its 8th year and continues to grow. MABA publishes two newsletters annually and hosts an annual conference with out-of-province guest speakers, who have included Maurice Feldman, Per Holth, Brian Iwata, Richard Malott, Jennifer McComas, Jerry Mertens, Linda J. Parrott Hayes, John Rapp, and David Wacker.

#### **MANITOBA'S INTERNATIONAL IMPACT ON BEHAVIOR ANALYSIS**

Starting in the 1960s, Martin and Pear, and later Holborn, Yu, and Virues-Ortega, have supervised graduate students from Brazil, Canada, China, Columbia, India, Mexico, and the U.S., and have interacted with behavior analysts internationally. They and their students have presented at numerous national and international behavior analysis conferences. In addition to publishing a large number of articles in behavioral journals, these authors, while in Manitoba, have published several behavioral books (see Tables 1 and

2). Collectively, the behavior-analytic books written by Manitoba authors have been translated into eight languages. Four of LeBow's books on behavioral treatment of eating disorders have been translated into Spanish, Japanese, German, and Polish. Various editions of Martin and Pear's textbook on behavior modification (now in its ninth edition and soon to be in its tenth) have been translated into Spanish, Italian, Portuguese, Chinese, and Korean, and are currently used as the primary textbook in courses at universities in 19 countries. Martin's book on behavioral sport psychology (now in its fourth edition) has been translated into Portuguese and Spanish, and it is currently used as the primary textbook in sport psychology courses at universities in nine countries.

Manitoba authors have had a major impact on promoting behavior analysis in other countries. Moreover, U of M graduates in behavior analysis have spread knowledge of behavior analysis to other countries, and a number have achieved highly influential positions and widespread recognition within the field of behavior analysis. For a province quite small in population and relatively isolated from other behavior-analytic communities, Manitoba has continued to train, maintain, and attract numerous behavior analysts to the U of M and St. Amant. With respect to the Brazilian connection, the relations established in the 1970s by Martin and Keller continue to grow, with current Manitoban behavior analysts maintaining and developing new connections in current areas of research (e.g., knowledge translation) and practice. Further, a number of international behavior analysts, including many from Brazil, continue to travel to Manitoba to study and work in the field.

Although a comprehensive analysis of the variables that have contributed to the establishment and ongoing development of the thriving



TABLE 2

**Selected Behavioral Books Published by Authors Who Have Lived and Worked in Manitoba since 1990. References Are in Chronological Order**

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- LeBow, M. D. (1991). *Overweight children: Helping your child to achieve lifetime weight control*. New York, NY: Insight Books/Plenum.
- Walker, J. R., Norton, G. R., & Ross, C. A. (Eds.). (1991). *Panic disorder and agoraphobia: A comprehensive guide for the practitioner*. Pacific Grove, CA: Brooks/Cole.
- Martin, G. L., & Pear, J. J. (1992). *Behavior modification: What it is and how to do it* (4th ed.). Englewood Cliffs, NJ: Prentice Hall.
- Martin, G. L., & Ingram, D. A. (1993). *New mental skills for better golf: Test your self-talk*. Winnipeg, Can.: IngMar Golf Products.
- Martin, G. L., & Osborne, J. G. (1993). *Psychology, adjustment, and everyday living* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.
- LeBow, M. D. (1995). *Overweight teenagers: Don't bear the burden alone*. New York, NY: Plenum.<sup>a</sup>
- Martin, G. L., & Pear, J. J. (1996). *Behavior modification: What it is and how to do it* (5th ed.). Upper Saddle River, NJ: Prentice Hall.<sup>b</sup>
- Stevens, W. H., & McCluskey, K. W. (1996). *Strategies for desperate parents: Managing the challenges of attention deficit and misbehaviour*. Lewiston, NY: Marvin Melnyk Associates.
- Martin, G. L. (1997). *Sport psychology consulting: Practical guidelines from behavior analysis*. Winnipeg, MB: Sport Science Press.<sup>c</sup>
- Martin, G. L., Toogood, A., & Tkachuk, G. (1997). *Behavioral assessment forms for sport psychology consulting*. Winnipeg, MB: Sport Science Press.
- LeBow, M. D. (1998). *Dieter's snake pit*. Winnipeg, MB: BBM Publications.
- Stevens, W. H., & McCluskey, K. W. (1998). *Strategies for desperate parents: Managing the challenges of attention deficit and misbehaviour* (2nd ed.). Lewiston, NY: Marvin Melnyk Associates.
- Martin, G. L., & Pear, J. J. (1999). *Behavior modification: What it is and how to do it* (6th ed.). Upper Saddle River, NJ: Prentice Hall.<sup>d</sup>
- Martin, G., & Ingram, D. (2001). *Play golf in the zone: The psychology of golf made easy*. San Francisco, CA: Van der Plas Publications.
- Pear, J. J. (2001). *The science of learning*. Philadelphia, PA: Psychology Press.
- Martin, G. L. (2003). *Applied sport psychology: Practical guidelines from behavior analysis* (2nd ed.). Winnipeg, MB: Sport Science Press.
- Martin, G. L., & Pear, J. J. (2003). *Behavior modification: What it is and how to do it* (7th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.<sup>e</sup>
- LeBow, M. D. (2005). *Multiple sclerosis depression: Thinking better to feel better*. Winnipeg, MB: Enableme.
- Martin, G., & Martin, T. (2006). *Curl in the zone: The psychology of curling made easy*. Winnipeg, MB: Sport Science Press.<sup>f</sup>
- Martin, G. L. (2007). *Applied sport psychology: Practical guidelines from behavior analysis* (3rd ed.). Winnipeg, MB: Sport Science Press.<sup>g</sup>
- Martin, G. L., & Pear, J. J. (2007). *Behavior modification: What it is and how to do it* (8th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.<sup>g</sup>
- Pear, J. J. (2007). *A historical and contemporary look at psychological systems*. Mahway, NJ: Erlbaum.
- Furer, P., Walker, J. R., & Stein, M. B. (2007). *Treating health anxiety and fear of death*. New York, NY: Springer.
- Stein, M. B., & Walker, J. R. (2009). *Triumph over shyness: Conquering shyness and social anxiety* (2nd ed.). Silver Spring, MD: Anxiety Disorders Association of America.
- LeBow, M. D. (2010). *Overcoming disability despair: Nine steps for talking away what's getting you down*. St. Louis, MO: Science & Humanities Press.
- Martin, G. L. (2011). *Applied sport psychology: Practical guidelines from behavior analysis* (3rd ed.). Winnipeg, MB: Sport Science Press.
- Martin, G. L., & Pear, J. J. (2011). *Behavior modification: What it is and how to do it* (9th ed.). Upper Saddle River, NJ: Pearson.<sup>h</sup>
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<sup>a</sup> Translated into Polish.

<sup>b</sup> Translated into Spanish.

<sup>c</sup> Translated into Portuguese.

<sup>d</sup> Translated into Italian.

<sup>e</sup> Translated into Korean.

<sup>f</sup> Translated into Japanese.

<sup>g</sup> Translated into Spanish.

<sup>h</sup> Translated into Chinese.

ing behavior-analytic community in Manitoba was not undertaken, we believe several factors have facilitated the development and maintenance of a strong behavior-analytic community in Manitoba.

A major facilitating factor was that in graduate school, Martin's training was in behavior modification and Pear's was in basic operant research. This proved to be a potent combination when they met at the U of M in the 1960s and for the many years of collaboration that followed. Two additional early contributors to this relationship were Glen Lowther at MDC and Sister Bertha Baumann at St. Amant, who were both insightful administrators who wanted to provide training opportunities for persons with IDs and children with autism, rather than just custodial care. Their support was hugely important for the development of the behavioral training programs at MDC and St. Amant by Martin, Pear, and their students. The work at MDC and St. Amant gained media attention (e.g., local newspaper, national television), which increased local community support for behavior analysis for persons with ID and autism. In addition to positive media attention, undergraduates in Manitoba with direct experience in research and applications in behavior analysis were a powerful lobbying force.

Many of the behavior-analytic contributions of Manitobans over the years have been based on collaborations between behaviorally oriented U of M faculty with psychology and nonpsychology faculty who typically did not describe themselves as behavior analysts. In addition, granting agencies that funded research of behavior analysis professors in Manitoba played a major role in influencing the research topics that either were or were not pursued. There was also a combined community and college need for a particular type of information that provided a strong

prompt for one of the early books on behavior modification published by Martin and Pear in 1978.

In the 1970s and 1980s in Manitoba, as well as in many countries around the world, normalization advocates, civil rights advocates, and behavior analysts collectively revolutionized the treatment and education of persons with ID. An opportunity to help develop a university program for psychologists with specialization in behavior modification was presented to Martin over dinner with Keller, which led to an international connection between Manitoba and Brazil. Also during the 1970s, the organization of behavior analysis conferences in Manitoba by the MBMA with well-known invited speakers from Brazil, Canada, Mexico, and the U.S. contributed significantly to the early influence of behavior-analytic research and applications that occurred in an isolated geographic region with a small population. With respect to the international collaborations that have occurred and continue to flourish in Manitoba, much can be achieved by sharing learning, knowledge, and expertise across cultures and countries.

With continued hard work and collaboration among behavior analysts in MABA, at the U of M, at St. Amant, and the behavior-analytic community as a whole, we expect to see the continuation and growth of Manitoba's tradition as a leader and innovator in the field of behavior analysis. We hope that this article will inspire other behavior-analytic communities around the world to examine the development and maintenance of their own regional behavior-analytic histories.

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